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## SCREW-WORM CONTROL IN THE SOUTHEASTERN STATES

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For many years the screw-worm has been a livestock pest of major importance in Texas and other southwestern States. The annual loss in Texas alone has been estimated at from \$4,000,000 to \$10,000,000.

Sporadic outbreaks of this insect have occurred in Louisiana, Mississippi, and Alabama, but it has not been a problem in Georgia and Florida until 1933. The first cases were reported from near the Georgia-Florida line in July of that year. Late in the summer and in the fall many animals were infested in the southern counties of Georgia and in northern Florida.

In May 1934 screw-worms began to attack livestock in the area invaded in 1933. The trouble spread rapidly until by the first of August cases were occurring throughout most of Florida and the southern half of Georgia, as well as in parts of Alabama, Mississippi, and Louisiana.

### Life History

The screw-worm flies are bluish-green blowflies with 3 dark stripes along the back between the wings, and with a yellowish-red face. The yellowish eggs are laid in irregular masses on the edges of wounds or blood spots. The eggs hatch in 10 to 12 hours into small maggots which promptly penetrate the wound, causing bleeding and pain. The maggots rapidly destroy the tissues and enlarge the wound, thus attracting more flies. Finally the vital organs are exposed or the poisons from the extensive wounds are absorbed and the animal dies. The worms become full grown (about 2/3 inch long) in 5 - 6 days, then they leave the wound or carcass, burrow into the ground and change into flies 3 to 14 days later.

There are two species of screw-worm flies which can be distinguished only by a microscopic examination. One of these is primarily a parasite of warm-blooded animals and it is usually the first to attack. The other species usually invades the wounds a little later, but the two may be present in the same wound. The maggots of certain other blowflies may also be found in wounds and in the soiled wool of sheep. These various blowflies breed in carcasses of dead birds and animals. The number of flies produced depends, of course, upon the size of the carcass. It has been estimated that the carcass of a horse or cow will breed about a million flies.

### Animals Attacked and Causes of Attack

Screw-worms will attack any warm-blooded animal. Sheep, cattle, hogs, goats, horses, mules, and dogs are infested in about the order named. Deer and other wild animals are frequently infested and people are also attacked.



Exposed wounds in man may be invaded and the maggots are occasionally found in the nose, the flies being attracted by catarrhal conditions or nose bleed.

The place of attack in domestic animals is dependent upon the location and type of injury which attracts the flies. Any part of the animal may be infested. Newly born animals are often infested in the navel and not infrequently in the mouth around the teeth. Ewes, cows, and mares, are frequently infested after giving birth to young. Screw-worm infestations often start from various injuries such as scratches from horns, brush, projecting corners or nails, slipped horns, etc. Hogs are frequently infested around their ears and heads in injuries from fighting or from dogs. The attack of other insects such as horse flies, horn flies, and especially ticks gives rise to many screw-worm cases. A large percentage of animals marked, castrated, branded, or dehorned while screw-worm flies are active become infested. As a matter of fact, any injury or the presence of a scab or blood spot on the skin may give rise to screw-worm attack.

#### Prevention of Screw Worms

Much of the loss from screw worms can be prevented by observing the following suggestions:

1. Do not castrate, dehorn, mark, or brand animals during the screw-worm season. In general this is between May 1 and November 15. If such work must be done, pine-tar oil should be applied to and around the wounds and the animals kept in a small pasture and closely observed and treated when necessary.
2. Avoid all injuries. Livestock should be handled carefully. Projecting boards, nails, etc., around stables and corrals should be removed. Animals likely to fight should be kept separate. Saddle and collar galls should be avoided.
3. Provide small pastures for wounded or screw-worm-infested animals, where they can be looked over carefully every day and treated when necessary.
4. Control ticks. The Gulf coast tick or "ear tick", which attaches mainly in the ears of sheep, cattle, and other animals, produces a condition which is very favorable for screw-worm attack. Animals infested with this tick should have the ears swabbed with pine-tar oil. This material should be brought in contact with all of the ticks but not enough used to run down into the ears. The mixing of 1 part of crude cottonseed oil with 2 parts of pine-tar oil will make it less irritating.

Dipping livestock as in the control of the cattle tick is not recommended for the Gulf coast tick because of the expense involved and because this treatment is not so effective as the swabbing of the individual ears. This species feeds upon many different animals and, therefore, it cannot be eradicated by dipping. The presence of cattle ticks also encourages screw-worm attack, hence the work of eradicating this pest should be pushed.



5. Burn all carcasses. The prompt destruction of all carcasses, preferably by burning, is important to prevent fly breeding.

To burn a carcass, dig a trench in the ground back of the animal. This should be about 1 to  $1\frac{1}{2}$  feet deep and nearly as broad and as long as the carcass. Fill the trench with wood and turn the animal over on top of it. Build the fire so that the wind will carry the flames under the carcass. One fourth of a cord of wood is sufficient to burn a large animal. Where wood is scarce, crude oil or distillate may be used in burning.

6. Watch all livestock closely and treat screw-worm cases promptly. This will reduce the injury to infested animals and will prevent the escape of the maggots and the breeding up of screw-worm flies on the premises.

7. Many screw-worm cases are caused by hooking, therefore it is advisable to dehorn cattle as a preventive practice. As pointed out, dehorning should be done in the cool weather of winter or early spring. The application to the horn base of a disc of gauze dipped in pine-tar oil is advisable if flies of any kind are about.

8. Controlling breeding so that the young are dropped early in the season before screw-worm flies are out will cut the losses materially.

9. Fly trapping. While large numbers of blowflies and house flies can be caught in cone-shaped flytraps developed by this Department, the extensive use of these traps in the Southeast is not recommended because it is doubtful if the benefits derived will outweigh the cost of the traps and of their operation.

#### Detecting Screw-Worm Cases

The presence of screw worms in a wound is usually indicated by a discharge of blood and serum. The infested animal often has a "sick" appearance and may be seen trying to scratch or lick the wound. Badly infested animals, especially sheep, tend to leave the herd and hide away in the brush. The yellowish egg masses of the flies are easily seen. Young maggots are not easily detected, especially in a large wound, but if the wound is observed closely their movement will be noted.

#### Treatment of Screw-Worm Cases

Although cattle may be treated on the open range, it is advisable to get the infested animals into a small pasture if possible. Small animals may be roped and thrown, but large ones are best treated in a chute or "squeeze." In all cases, the animals should be handled as carefully as possible to avoid other injuries.

Benzol has been found after extensive experience to be the best all-round screw-worm killer. The commercial grade (90 percent) is recommended. It is generally available, relatively cheap (\$0.50 to \$1.00 per gallon, de-



pending upon locality and quantity purchased), does not deteriorate upon standing, and does not injure the tissues. It is best applied with a syringe or oil can but it may be poured into the wound from a narrow-necked bottle. Before the benzol is applied, the blood and serum should be removed from deep wounds with absorbent cotton because the benzol will not mix with the blood and the maggots may escape destruction. In the case of wounds with a small external opening it is well to put benzol in the wound and then plug the opening with a piece of cotton with benzol on it. The worms are usually killed in 2 or 3 minutes, but care should be taken to see that the worms in all of the pockets and crevices are actually dead. To insure this it is best to apply a little more benzol 2 or 3 minutes after the first application. The wound and the area around it are then lightly but thoroughly coated with commercial pine-tar oil. A uniform grade with a specific gravity of 1.065 to 1.085 should be used. The Department has tried many different materials as wound dressings to repel flies and has found nothing better than pine-tar oil. Home-run pine tar is irritating to wounds and is much less repellent to flies than the standardized commercial material. If home-run tar must be used, 1 part of it should be mixed with 2 parts of cottonseed oil. In the case of valuable animals, especially if they are heavily infested, the services of a competent veterinarian should be secured.

The number of treatments necessary depends on the abundance of screw-worm flies, the nature of the wound, and other factors. Observe the wound daily and, if eggs are present, make a light application of benzol followed by a coating of pine-tar oil. If no eggs or worms are present, pine-tar oil should be applied every day or two until the wound is healed.

#### Community Action Desirable

It is the problem of each livestock owner to watch his own animals and treat them when they are attacked, as well as to carry out the preventive practices set forth herein, but the most effective control demands coordinated effort of all the residents of a community. Flies can travel many miles and, therefore, carcasses left on the range or by the roadside and infested animals left untreated are a menace to the entire community. By proper cooperation, money can be saved in the purchase of benzol and pine-tar oil and also in scouting for infested animals and carcasses, and even in case treatment and carcass destruction.

While the screw-worm situation in the Southeast is serious, there is no cause for hysteria. By the general spreading of knowledge regarding the pest and how to prevent and treat cases, and by the full cooperation of all those concerned, losses can be greatly reduced. There is little danger of infestation of human beings by direct attack of the flies and practically none from eating meat which may have been blown during or after slaughter.

Essential information is given in this circular, but more details are available in Farmers' Bulletin 857, or from the County Agricultural Agent.